

1. A method for despreding a received spread spectrum signal, comprising the steps of:
transforming said received signal;
multiplying said transformed signal with a set of transformed spreading codes; and
summing said multiplied signal to generate a despread signal.

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2. A method as recited in claim 1 further including an additional step after said summing step for canceling by-products from said despread signal.

3. A method as recited in claim 1 wherein said transforming step and said transformed
10 spreading codes use the same transformation.

4. A method as recited in claim 1 wherein said transformed spreading codes is generated by transforming spreading codes using a transformation method, comprising the steps of:

- splitting two bits from a spreading code alternately into I and Q data;
15 converting said I and Q data;
inserting zeros alternately into said I and Q data;
inserting an initial condition for said I and Q data; and
calculating transformed output as a function of said I and Q data.

- 20 5. A method as recited in claim 4 wherein in said inserting zeros step the first zero is inserted after the first bit of said I data and the first zero is inserted before the first bit of said Q data.

6. A method as recited in claim 4 wherein said inserting an initial condition step a zero is inserted for said I data and a -1 or 1 is inserted for said Q data.

7. A method as recited in claim 4 wherein in said calculating step the equation, $y(k) = I(k - 1)Q(k) - I(k)Q(k - 1)$, is used for calculating said transformed codes.

8. A method as recited in claim 2 wherein said canceling step comprises the following substeps:

summing M samples, where M is an integer;

10 subtracting $4/M$ from said output for said transformed spreading codes in the range of 1-8; and

adding $4/M$ to said output for said transformed spreading codes in the range of 9-16.

9. A method for despreading a received, sampled spread spectrum signal, comprising the steps of:

transforming said received signal;

down sampling said transformed signal;

multiplying said down sampled signal with a set of transformed spreading codes; and

summing said multiplied signal to generate a despread signal.

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10. A method as recited in claim 9 further including an additional step after said summing step for canceling by-products from said despread signal.

11. A method as recited in claims 10 wherein said canceling step is performed as a function of an average of said down sampled signal and said despread signal.

12. A method as recited in claim 9 wherein said transforming step and said transformed
5 spreading codes use the same transformation.

13. A method as recited in claim 9 wherein said transformed spreading codes is generated by transforming spreading codes using a transformation method, comprising the steps of:

splitting two bits from a spreading code alternately into I and Q data;

10 converting said I and Q data;

inserting zeros alternately into said I and Q data;

inserting an initial condition for said I and Q data; and

calculating transformed output as a function of said I and Q data.

15 14. A method as recited in claim 13 wherein in said inserting zeros step the first zero is inserted after the first bit of said I data and the first zero is inserted before the first bit of said Q data.

15. A method as recited in claim 13 wherein said inserting an initial condition step a zero is
20 inserted for said I data and a -1 or 1 is inserted for said Q data.

16. A method as recited in claim 13 wherein in said calculating step the equation, $y(k) = I(k - 1)Q(k) - I(k)Q(k - 1)$, is used for calculating said transformed codes.

17. A method as recited in claim 10 wherein said canceling step comprises the following substeps:

summing M samples, where M is an integer;

5 subtracting $4/M$ from said output for said transformed spreading codes in the range of 1-8; and

adding $4/M$ to said output for said transformed spreading codes in the range of 9-16.

18. A method for converting spreading codes for de-spreading a spread spectrum signal to transformed codes for de-spreading said spread spectrum signal, said spreading codes comprising of 0's and 1's, comprising the steps of:

splitting two bits from a spreading code alternately into I and Q data;

converting said I and Q data;

inserting zeros alternately into said I and Q data;

15 inserting an initial condition for said I and Q data; and

calculating transformed codes as a function of said I and Q data.

19. A method as recited in claim 18 wherein in said inserting zeros step the first zero is inserted after the first bit of said I data and the first zero is inserted before the first bit of said Q data.

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20. A method as recited in claim 18 wherein said inserting an initial condition step a zero is inserted for said I data and a -1 or 1 is inserted for said Q data.

21. A method as recited in claim 18 wherein in said calculating step the equation, $y(k) = I(k - 1)Q(k) - I(k)Q(k - 1)$, is used for calculating said transformed codes.

